

## REMARKS

Claims 1-14 are pending in this application.

### **I. Claim Rejections under 35 U.S.C. § 103(a)**

Claims 1, 2, 6, and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over US 4,350,770 issued to Spraker. The Patent Owner traverses this rejection.

The Examiner points to column 9 at lines 13-19 where Spraker recites a pH of 5.5 to 8.5. The actual language is discussing a wastewater stream, such as activated sludge treatment systems or outdoor lagoons or pools. It says in relevant part:

Desirably, the pH is maintained in a range of about 5.5 to about 8.5, preferably 6.5 to 8.0. Control of the pH can be by monitoring of the system and an addition of appropriate pH adjusting materials to achieve this pH range.

The preferred range of from 6.5 to 8.0 favors a basic pH since 7.0 is neutral and the range occupies a space from 0.5 under neutral to 1.5 over. This is weighted o the basic side. Similarly, the salt solution actually used by Spraker (an upon which the Examiner relies to make this rejection) is a “basic” salt solution. See column 10 at lines 53-60.

The undersigned respectfully submits that the Examiner misinterprets Spraker by equating Sparker’s wastewater with Spraker’s basic salt solution, and so also mischaracterizes the pH of this salt solution. The salt solution was merely used to culture microorganisms. The wastewater is a very different solution, sometimes requiring supplementation to get total phosphorous up to 1 ppm per 100 BOD<sub>5</sub>:

Normally, the wastewater to be subjected to the process of this invention will contain sufficient nitrogen and phosphorus for culturing without the need for any additional source of nitrogen or phosphorus being added. However, in the event the wastewater is deficient in these two components, suitable available nitrogen sources, such as ammonia or an ammonium salt, e.g., ammonium sulfate, can be added to achieve an available nitrogen content of at least about 10 ppm or more per 100 BOD<sub>5</sub>. Similarly, phosphorus can be supplemented, if necessary, by addition of materials such as orthophosphates, e.g., sodium phosphate, to

achieve a phosphorus level in the wastewater of about 1 ppm or more per 100 BOD<sub>5</sub>. In general, the treatment is conducted for a sufficient time to achieve the reduction in oleaginous material content desired and, in general, about 3 hours to about 1 week or longer, although this will depend upon the temperature of culturing, the volume to be treated and other factors, has been found to be suitable.

“BOD<sub>5</sub>” is five day biochemical oxygen demand. This information fairly characterizes the usual range of values:

Most pristine rivers will have a 5-day BOD below 1 mg/L. Moderately polluted rivers may have a BOD value in the range of 2 to 8 mg/L. Municipal sewage that is efficiently treated by a three-stage process would have a value of about 20 mg/L or less. Untreated sewage varies, but averages around 600 mg/L in Europe and as low as 200 mg/L in the U.S., or where there is severe groundwater or surface water infiltration. (The generally lower values in the U.S. derive from the much greater water use per capita than in other parts of the world.)

[http://en.wikipedia.org/wiki/Biochemical\\_oxygen\\_demand](http://en.wikipedia.org/wiki/Biochemical_oxygen_demand)

Thus, the amount of total phosphorous in Spraker's wastewater is 0.00002 g/l (or 0.002%) in the United States and 0.00006 g/l (or 0.006%) in Europe. The range is far below what is presently claimed. That is the wastewater having a pH from 5.5 to 8.5, not the “basic” salt solution of Spraker's Example 1. Thus, it is untrue to say that the salt solution of Spraker had a pH from 5.5 to 8.5, since that is merely Spraker's recommended pH for the overall wastewater. The more concentrated salt solution of Example 1 is “basic” and so it is also unsuited for foliar application. The claimed solution has a functional advantage not recognized by Spraker, which is use as a nutrient that may be delivered foliarly.

As such, the rejection cannot stand. The undersigned requests the Examiner to withdraw the rejection.

Claims 1, 6, and 12 stand rejected under 35m U.S.C. §103(a) over Fenn et al '84 and Dolan et al. '88 with evidence exemplified by Barlet 5,070,083. The Patent Owner traverses this rejection.

The application of Barlet is unclear since Barlet merely uses a phosphonate in combination with an acetate. The phosphonate is administered in an amount ranging from 1 g to 120 g per liter. This far exceeds the concentrations used by Fenn and Dolan. Moreover, the solution of Barlet has no phosphate, so there is no competitive uptake phenomenon. Barlet seems to exemplify nothing.

As explained in our response filed June 3, 2008 with extensive citation to the references themselves, phosphonate and phosphate are biological strangers in the sense that they behave differently *in vivo*. As shown on page 13, phosphonate absorption in *P. palmivora* is substantially delayed until phosphate is consumed. At dilute concentrations of less than 3 mM, phosphonate inhibits growth, but the inhibitory effect diminishes above that value. The addition of phosphate reduces the inhibitory effect, due to the competitive uptake noted above.

What is claimed significantly exceeds the concentrations in use by Fenn and Dolan. According to what these references teach, nobody would want to use concentrations of phosphonate above that range because the inhibitory effect diminishes above 0.3 mM. Although the Examiner is perhaps using Barlet to show use of phosphonate in amounts exceeding 0.3 mM, this contradicts the teachings of Fenn and Dolan. Furthermore, according to Fenn and Dolan, as further studied by Griffith, nobody would want to combine phosphonate with phosphate because the use of phosphonate would make the phosphonate less effective due to competitive uptake.

The rejection cannot stand because it teaches away from what is claimed by showing that what is claimed should not work as it does in the intended environment of use.

Claims 1, 6 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barlet, US 4,139,616, issued to Ducret et al., US 5,169,646, US 5,514,200 issued to Vetanovetz et al., and Smile et al. '89. The Patent Owner traverses this rejection.

The undersigned objects to the form and incompleteness of the rejection. The rejection is not stated with sufficient specificity to permit a proper response. There is merely a listing of references and no explanation as to how or why they are being applied. Moreover, there is no US patent "53905418" to Vetanovitz. The Examiner

may have intended US patent 5,395,418, but the Undersigned is left to guess what the Examiner intended. "Smiley '89" is unknown to us and is not described with sufficient clarity to permit us to identify the reference.

The rejection appears to operate under a mistaken impression that the art teaches one can merely combine phosphonate and phosphate materials at will. That is not what the art teaches. Barlet teaches only the use of phosphonate, alone without phosphate, as does Ducret, Horriere and Lovat (phosphonate acid-esters). Vetanovitz teaches the use of urea phosphate, alone without phosphonate. Given this trend, it seems likely that Smiley '89 describes the use of one material alone and without the other. To use phosphonate and phosphate in combination, as claimed, would controvert the teachings of Fenn and Dolan. These references merely respect the competitive uptake phenomenon by using phosphonate without phosphate and vice-versa. This cannot be used as a basis to reject the claims.

## **II. Double Patenting Rejections**

Claims 1-14 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent 6,509,041. Applicant disagrees with the Examiner that the instant claims are rendered obvious by claims 1-12 of U.S. Patent 6,509,041. However, Applicant recognizes that a timely filed Terminal Disclaimer may overcome such a rejection, and will timely submit a Terminal Disclaimer if necessary.

For the foregoing reasons, Applicant's attorney respectfully submits that the claims are worthy of allowance. The fee associated with a Petition for Revival is submitted herewith. Applicant believes no additional fees are due, however, if any additional fee is deemed necessary in connection with this Response, please charge Deposit Account No. 12-0600.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Dan Cleveland', is written over a horizontal line.

Dan Cleveland, Reg. No. 36,106  
Lathrop & Gage LLP  
4845 Pearl East Circle, Suite 201  
Boulder, CO 80301  
(720) 391-3012 (phone)  
(720) 931-3001 (fax)